

a1
applying a coherency filter to the events, wherein coherent events are identified; and
replacing the attenuated amplitudes in the frequency-sorted gather with amplitudes
corresponding to the coherent events.

a2
13. (Amended) A method of identifying primary events in seismic data, the method
comprising:

sorting the seismic data according to frequency;
applying a coherency filter to the seismic data; and
selectively attenuating events in the seismic data, wherein the selectively attenuating
is dependent upon the frequency and coherency of events identified by the coherency filtering.

Please cancel ~~claims 15 and 19.~~

Please add new claim 20.

a3
20. A system for identifying primary events in seismic data comprising:
means for sorting the seismic data according to frequency;
means for coherency filtering the seismic data; and
means selectively attenuating events in the seismic data, the means for selectively
attenuating dependent upon the frequency and coherency of events determined by the means for
coherency filtering.

REMARKS

Please reconsider the application in view of the above amendments and the following
remarks.

1. Information Disclosure Statement

The Information Disclosure Statement filed on 7/2/01 was objected to. Applicant
files herewith a new Information Disclosure Statement including the required fee. Applicant
respectfully notes that non patent reference cited in the Information Disclosure Statement filed
on 7/2/01 were only provided to show background information, specifically, that the meaning of
the terms "primary events," "absorption," and "attenuation" were well known in the art at the

time the Applicant filed his application. Correct references to the relevant pages in each non patent reference have now been provided.

2. Drawings

The drawings were objected to as not having a brief description of acts performed in a method according to disclosed embodiments of the invention. The Applicant submits herewith for the Examiner's approval a replacement drawing sheet for Figure 4 and Figure 5 which are responsive to this objection.

3. Claim Rejections – 35 U. S. C. § 112

Claims 1-19 were rejected on the ground that the specification did not disclose the best mode of carrying out the invention contemplated at the time of filing the application. The Applicant respectfully traverses this ground of rejection. The Applicant respectfully notes that there is no requirement to specifically indicate which particular embodiment, where a plurality of embodiments is disclosed, is the best mode contemplated by the inventor. The Applicant respectfully refers the Examiner to two sections of the MPEP which deal with this issue. First, an applicant may disclose a plurality of embodiments without specifically identifying which one of them is the "preferred" or "most preferred" embodiment. *See* MPEP § 2165.01. Second, it is only required that the description of the invention actually include a description of the best mode. Generally, the Examiner should assume that the best mode has been disclosed absent direct evidence to the contrary. *See* MPEP § 2165.03. However, to allay any concerns that may remain as to whether the best mode has been disclosed, the Applicant has amended the title of the section to read "DESCRIPTION OF THE PREFERRED EMBODIMENTS." The Applicant believes that this amendment and explanation are fully responsive to the rejection and requests that the rejection be withdrawn.

4. Claim Amendments

Applicant has amended claims 1 and 13 only for purposes of clarifying the invention. Similarly, claim 19 has been canceled and replaced by new claim 20 only for the purpose of

clarifying the invention. The Applicant has not amended any claims or added any new claims for the purpose of avoiding prior art.

5. Claim Rejections – 35 U.S.C. § 102(e)

Claims 1-19 were rejected as anticipated by U. S. patent no. 6,393,365 issued to Runnestrand et al. ('365 patent). The Applicant respectfully traverses this rejection to the extent it may apply to the amended claims and to new claim 20.

Independent claim 1 recites a method for identification of primary events in seismic data. The method of claim 1 includes sorting the data ~~be~~ by frequency wherein a frequency sorted data gather results. In the frequency sorted gather at least some non-primary events are separated from primary events. The method of claim 1 then includes attenuating amplitudes above a preselected base amplitude in the frequency sorted gather, applying a coherency filter to the frequency sorted gather to identify coherent events, and replacing the attenuated amplitudes with the coherent events.

First, the Examiner stated that sorting the data by frequency is disclosed in the '365 patent. The Applicant respectfully disagrees. The '365 patent discloses generating a common-depth-point (CDP) gather of seismic data. Such gathers are performed in the time domain and are not sorted by frequency. Therefore, at least one limitation of the method recited in Applicant's claim 1 is not disclosed in the '365 patent. Second, claim 1 recites replacing attenuated amplitudes with amplitudes of identified coherent events. The '365 patent only discloses muting traces which fall below a selected correlation threshold, and stacking unmuted traces. Claim 1, by contrast, recites attenuating amplitudes in the frequency sorted gather which are above a preselected amplitude. Finally, there is nothing in the '365 patent which discloses or suggests replacing amplitudes in attenuated traces with amplitudes from identified events, coherent or otherwise. Therefore, two other elements of claim 1 are not disclosed or fairly suggested by the '365 patent. For at least these reasons, the '365 patent cannot anticipate claim 1. The Applicant therefore believes that claim 1 is patentable over the '365 patent.

Claims 2 and 3 depend from claim 1 and are patentable for at least the same reasons advanced with respect to claim 1.

Claim 4 recites a method for identifying primary events in seismic data, including sorting the data by frequency such that at least some primary events are separated from primary events. A coherency filter is applied to the events such that coherent ones of the events are identified, and finally amplitudes in the frequency sorted data that are above a selected base amplitude are attenuated when these amplitudes are not associated with coherent events. As explained above with respect to claim 1, the '365 patent does not disclose or suggest sorting data by frequency. Further, the '365 patent does not disclose or suggest attenuating amplitudes which are above a selected base or threshold amplitude. By contrast, the '365 patent discloses attenuating or muting traces which fall below a selected threshold ("RB cutoff"). For at least these reasons, the '365 patent does not anticipate claim 4. The Applicant therefore believes that claim 4 is patentable over the '365 patent. Claims 5 and 6 depend from claim 4 and are patentable for at least the same reasons advanced with respect to claim 4.

Claim 7 recites a system for identifying primary events in seismic data. The system recited in claim 7 includes means for performing each of the acts recited in claim 1, and therefore corresponds directly to claim 1. Claim 7 is believed to be patentable for at least the same reasons advanced with respect to claim 1. Claims 8 and 9 depend from claim 7 and are patentable for at least the same reasons advanced with respect to claim 7.

Claim 10 recites a system for identifying primary events in seismic data. The system of claim 10 includes means for performing acts corresponding to method claim 4. Claim 10 therefore corresponds directly to claim 4. Claim 10 is therefore patentable for at least the same reasons advanced with respect to claim 4. Claims 11 and 12 depend from claim 10 and are patentable for at least the same reasons advanced with respect to claim 10.

Claim 13 recites a method of identifying primary events in seismic data, the method comprising sorting the seismic data according to frequency, applying a coherency filter to the seismic data and selectively attenuating events in the seismic data. The selectively attenuating is dependent upon the frequency and coherency of events identified by the coherency filtering. As explained above with respect to claim 1, the '365 patent does not show or fairly suggest sorting the data by frequency, nor does it show or suggest selectively attenuating the data depending on the frequency and coherency of events identified by the coherency filtering. Accordingly, claim

13 is not anticipated by the '365 patent. Claims 14 and 16-18 ultimately depend from claim 13 and are patentable for at least the reasons advanced with respect to claim 13.

New claim 20 recites a system for identifying primary events in seismic data, in which elements of the system perform substantially the same acts recited in claim 13.

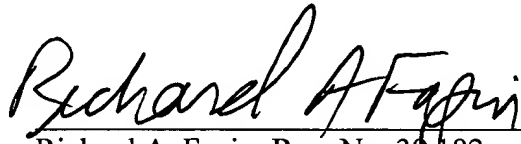
Accordingly, claim 20 is patentable for at least the same reasons as claim 13.

The Applicant believes that this paper is fully responsive to each and every ground of rejection or objection cited by the Examiner in the Office Action dated July 8, 2002 and respectfully requests early favorable action on his application.

Please apply any charges not covered, or any credits, to Deposit Account (Reference Number P30564US).

Respectfully submitted,

Date: 10/30/02



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